UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/578,290	05/25/2000	James E Carey	OID06-31(16101)	5934

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ART UNIT	PAPER NUMBER
2195	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	09/578,290	CAREY, JAMES E
	Examiner	Art Unit
	LILIAN VO	2195

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 April 2008*.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *See Continuation Sheet* is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1, 2, 4, 6 – 8, 10, 11, 13, 15 – 17, 19, 20, 22, 24 – 26, 28, 29, 31, 33, 34 and 36 - 54* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 1, 2, 4, 6 - 8, 10, 11, 13, 15 - 17, 19, 20, 22, 24 - 26, 28, 29, 31, 33, 34 and 36 - 54 .

DETAILED ACTION

1.   Claims 1, 2, 4, 6 – 8, 10, 11, 13, 15 – 17, 19, 20, 22, 24 – 26, 28, 29, 31, 33, 34 and 36 - 54

are pending. Claims 3, 5, 9, 12, 14, 18, 21, 23, 27, 30, 32 and 35 have been cancelled.

2.   A request for continued examination under 37 CFR 1.114, including the fee set forth in 37

CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for

continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely

paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on 4/30/08 has been entered.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject
> matter which the applicant regards as his invention.

4.   Claims 50 - 52 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as the

invention.

5.   **Claims 50 - 52** recite the limitations assigning a task to a task queue comprises selecting a

task queue, determining whether the selected task queue is in a non-empty state, if the selected task

queue is in a non-empty state, stealing a next task in sequence from the non-empty selected task

queue by moving the task from the non-empty selected task queue to an associated queue that is

empty, otherwise repeating the steps of selecting and determining until a selected task queue in a

non-empty state is found. This is considered unclear and confusing. The specification discloses

that the invention is assigning tasks to an empty task queue and stealing tasks from other non empty

queue to help balancing the workload, which are two different functions. However, claims as

recited assigning tasks by keep searching until a non empty task queue is found. Clarification is

required.

Double Patenting

6.   Applicant is advised that should claims 1, 28 and 38 be found allowable, claims 33, 40, 43,

49 and 54 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two

claims in an application are duplicates or else are so close in content that they both cover the same

thing, despite a slight difference in wording, it is proper after allowing one claim to object to the

other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section
> 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the
> subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary
> skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

8.   Claims 6, 15, 24 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Flood et al. (US 6,526,422, hereinafter Flood).

9.   Regarding **claim 6**, Flood discloses in a multithreaded computing environment, a method of

processing computing tasks (abstract), comprising:

defining a plurality of worker threads, each thread capable of processing a task (fig. 4C, col.

5 lines 61 - 67);

defining a plurality of task queues, each task queue capable of queuing a plurality of tasks

(fig. 4C, col. 6 lines 5 - 9);

associating each task queue with a single respective worker thread (fig. 4C, col. 6 lines 5 -

9);

assigning a task to an assigned task queue (col. 5 lines 61 - 67), by:

selecting a task queue (col. 5 lines 61 - 67, col. 6 lines 5 - 9, 25 - 30, 44 - 52);

determining whether the selected task queue is in a non-empty state (col. 6 lines 44-

52);

repeating the steps of selecting and determining until an empty task queue is found

(col. 6 lines 44 - 52);

placing the task in the empty task queue, the empty task queue as a result being

designated the assigned task queue (col. 6 lines 44 - 52, col. 7 lines 34 - 44, col. 9 lines 55 -

62); and

in a worker thread not associated with the assigned task queue, processing the task, wherein

the task is located during the act of processing, in the assigned task queue (col. 6 lines 18 - 22, col. 7

lines 34 - 44, col. 8 lines 4 - 17, col. 9 lines 55 - 62).

Flood discloses the step of assigning tasks to the GC threads (col. 5 lines 61 - 67, col. 6 lines

24 - 30, 44 - 52) but did not clearly disclose that the tasks are being directly assigned to the work

queue. However Flood discloses that each GC thread has respective work queue 30 (col. 6 lines 5 -

9, fig. 4C). It would have been obvious for one of an ordinary skill in the art at the time the

invention was made to recognize that assigning tasks to GC threads would also suggest assigning

tasks to task queues because each GC thread performs tasks in its work queue until the queue is

empty and then search other threads' queues for tasks to steal and perform (col. 6 lines 18 - 24).

10.   **Claims 15, 24 and 39** are rejected on the same ground as stated in claim 6 above.

11.   Claims 1, 2, 4, 7, 8, 10, 11, 13, 16, 17, 19, 20, 22, 25, 26, 28, 29, 31, 33, 34, 36 - 38 and 40 -

54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flood et al. (US 6,526,422), as

applied to claims 6, 15, 24 and 39 above, in view of Sullivan (US Pat. 5,438,680).

12.   Regarding **claim 1**, Flood discloses in a multithreaded computing environment, a method of

processing computing tasks (abstract), comprising:

          defining a plurality of worker threads, each thread capable of processing a task (fig. 4C, col.

5 lines 61 - 67);

          defining a plurality of task queues, each task queue capable of queuing a plurality of tasks

(fig. 4C, col. 6 lines 5 - 9);

          associating each task queue with a respective worker thread (fig. 4C, col. 6 lines 5 - 9);

          assigning a task to a task queue (col. 5 lines 61 - 67) by:

selecting a task queue (col. 5 lines 61 - 67, col. 6 lines 5 - 9, 25 - 30, 44 - 52);

determining whether the selected task queue is in a non-empty state (col. 6 lines 44-

52);

repeating the steps of selecting and determining until an empty task queue is found

(col. 6 lines 44 - 52);

placing the task in the empty task queue (col. 6 lines 44 - 52, col. 7 lines 34 - 44, col.

9 lines 55 - 62); and

from a worker thread, processing a task from a task, wherein the task is located, during the

act of processing, in a task queue not associated with the thread (col. 6 lines 18 - 22, col. 7 lines 34 -

44, col. 8 lines 4 - 17, col. 9 lines 55 - 62).

Flood discloses the step of assigning tasks to the GC threads (col. 5 lines 61 - 67, col. 6 lines

24 - 30, 44 - 52) but did not clearly disclose that the tasks are being directly assigned to the work

queue. However Flood discloses that each GC thread has respective work queue 30 (col. 6 lines 5 -

9, fig. 4C). It would have been obvious for one of an ordinary skill in the art at the time the

invention was made to recognize that assigning tasks to GC threads would also suggest assigning

tasks to task queues because each GC thread performs tasks in its work queue until the queue is

empty and then search other threads' queues for tasks to steal and perform (col. 6 lines 18 - 24).

Flood did not clearly teach the process of assigning a task to a task queue in an essentially random

fashion. This feature can be found in Sullivan in which tasks are simply assigned to processors in a

generally random fashion (col. 6, lines 35 – 61). It is obvious for one of ordinary skill in the art, at

the time the invention was made to incorporate this feature to Flood to optimize system

performance with task assignment.

13.   Regarding **claim 2**, as modified Flood discloses selecting comprises selecting a task queue

believed to be empty (Flood: col. 6 lines 44 - 52).

14.   Regarding **claim 4**, as modified Flood discloses the method of claim 1 further comprising,

from a worker thread, processing a task from the associated task queue (Flood: col. 6 lines 5 - 9, 18

- 24).

15.   Regarding **claim 7**, Flood discloses of placing tasks in task queue (col. 5 lines 61 - 67) but

did not clearly teach the process of selecting an assigned task queue in an essentially random

fashion. Nevertheless, this feature can be found in Sullivan in which tasks are simply assigned to

processors in a generally random fashion (col. 6, lines 35 – 61). It is obvious for one of ordinary

skill in the art, at the time the invention was made to incorporate this feature to Flood to optimize

system performance with task assignment.

16.   Regarding **claims 45 - 48**, as modified Flood discloses the determining whether the selected

task queue is in a non-empty state comprises checking a task in the selected task queue to determine

if the task is in the process of being removed by a worker thread and checking a task in the selected

task queue to determine if the task is being acted upon by a worker thread (Flood: col. 8 lines4 - 17,

col. 10 lines 39 - 59.

17.   Regarding **claims 50 - 52**, as modified Flood discloses the (Flood: col. 8 lines 4 - 17).

18.   **Claims 8, 10, 11, 13, 16, 17, 19, 20, 22, 25, 26, 28, 29, 31, 33, 34, 36 - 38, 40 - 44, 49, and**

53 - 54 are rejected on the same ground as stated in claims 1, 2, 4, 7, 45 - 48 and 50 - 52 above.

Response to Arguments

19.   Applicant's arguments with respect to claims 1, 2, 4, 6 – 8, 10, 11, 13, 15 – 17, 19, 20, 22, 24

– 26, 28, 29, 31, 33, 34 and 36 - 54 have been considered but are moot in view of the new ground(s)

of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner

should be directed to LILIAN VO whose telephone number is (571)272-3774. The examiner can

normally be reached on Thursday 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor,

Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where

this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system,

see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system,

contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like

assistance from a USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Meng-Ai An/   Lilian Vo
Supervisory Patent Examiner, Art Unit 2195   Examiner
                                                          Art Unit 2195

lv
July 17, 2008